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FALL 1968

KENNEDY OFFERS LOW COST MODEL 1600 INCREMENTAL TAPE RECORDER

SBM Associates is proud to announce that it is now the representative for Kennedy Co. of Altadena, California. The Model 1600 Incremental Magnetic Recorder gives the advantage of magnetic tape in data recording at a price competitive with paper tape punches. The Recorder produces computer compatible tapes when fed from data sources which vary randomly in rate up to the maximum recording rate. Because no buffer is needed, the Model 1600 is a simple straightforward system.

Character spacing on the tape is independent of input rate so tapes can be read conventionally on computer tape transports. Standard operating speed is 0 to 300 characters per second.

Integrated circuits throughout the Model 1600 assure reliability and simplicity. Standard inputs are compatible with DTL logic having voltage swings larger than 3.0 volts.

The standard interface is compatible with current sinking positive logic having a "one" level of +4 to +6V and a "zero" level of $0 \pm 0.5V$. All functions, except for remote controls, are initiated by "one" levels. "Zero" levels should be capable of sinking 5 ma.

Kennedy Model 1600 is priced at \$2750.



Options

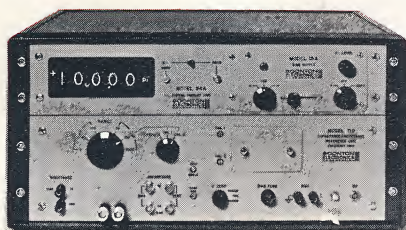
- Flux Check™ (Model 1600FC) is an exclusive Kennedy feature, checking data on the tape as it is written. If the character desired is not successfully written, a true read-after-write check, an error output, is produced in less than 2 milliseconds of the write command.
- Continuous read (Model 1600R) may be incorporated to read in the slew mode at 1000 characters per second. Start and stop typically require less than five character spaces. The 1600R is very useful in such applications as input and output from small computers.

Other optional features include:

Echo check, reverse drive, special interface, high stepping rate—0-500 characters per second.

For full data on the Kennedy 1600, check Number 1 on the ECHO CARD.

Boonton Announces First Digital 1 MHz C/L Meter



Boonton's new meter provides continuous, high resolution measurements of either capacitance or inductance at 1 MHz with digital readout. Model 700A digitally indicates three-terminal capacitance from 0 to 1000 pf and two-terminal inductance from 0 to 100 uh with the speed (333 msec) and convenience of a DVM.

The basic accuracy of this meter is $\frac{1}{2}\%$. A true three-terminal capacitance input is featured, using ground as shield. Error-free connections can easily be made to jigs or component handling mechanisms. Other inputs are provided for differential capacitance measurements.

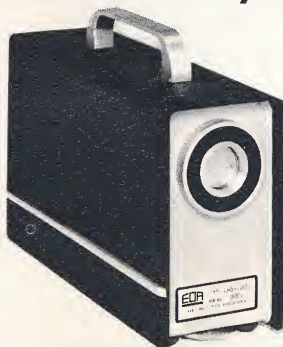
Three capacitance and three inductance ranges, plus four-digit readout and 40% overrange result in 0.002 pf and 0.0002 uh resolutions. A BCD output feeds a computer or printer. DC bias from an internal supply (0 to 100 V) or external source may be displayed on the digital readout.

Boonton Model 700A has a crystal-controlled test frequency and fixed (15 mv rms) test level to assure highly stable measurements. The meter handles a wide range of Q (down to 3 for all values) and is easily checked with a built-in high Q and low Q, 100 pf standard.

Immediate delivery is available. Priced at \$2500.

Check Number 2 on ECHO CARD.

Electro Optics Associates LAS-2002 Laboratory Laser



EOA has developed the LAS-2002 Laboratory Laser especially for the educational market. The unit serves as a simple and functional coherent light source. The only controls or adjustments are an on-off switch and a levelling screw.

The mirrors are sealed within the vacuum envelope, with the unit permanently aligned at the factory. Dust and humidity can have no effect. The cylindrical glass barrel of the tube not only serves as a gas reservoir, but also as a rigid and strain-free spacer of the optical resonator. A new type of heated cathode assures exceptional tube life, due to the complete elimination of cathode sputtering of any kind, and associated gas cleanup.

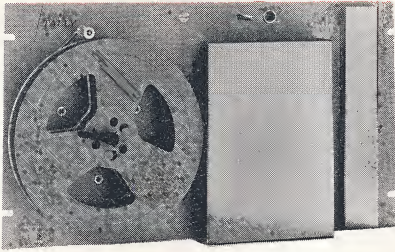
The integral power supply operates from an AC line. The one-half milliwatt of red, coherent light at 6328 Angstroms is collimated to 1.5 milliradians. The power level is considered an excellent compromise between visibility and absolute safety (taking into account the protective reflex of the human eye).

The cover of the laser can easily be removed for the display of the laser cavity. No hot leads or wires are exposed to accidental touch, an important safety feature.

The EOA LAS-2002 is priced at \$232.

Check Number 3 on ECHO CARD

TALLY TAPE PERFORATOR MODEL P25PR ANNOUNCED



Now on the market is Tally Corporation's eight-channel asynchronous tape perforator, operating at any speed up to 25 characters per second. Paper tape in widths of one inch, $\frac{7}{8}$ inch, or $\frac{1}{2}$ inch may be used. The perforator is particularly suitable for data logging applications, since the unit is totally quiescent when not punching. The unit sells for \$750.

The P25PR is designed to be panel mounted for rack mounted installation. Accommodation is made for tape supply and tape take-up reeling. A large

capacity chad box forms the punch head cover.

The Tally Perforator has eight data punches and one feed sprocket punch, each controlled by an individual power solenoid with spring return. Forward feeding of the tape is by a solenoid operating a pawl and ratchet tape feed mechanism, the forward motion taking place on the spring return stroke of the solenoid. The release point of the tape feed solenoid is delayed 5 milliseconds beyond the code punch release to permit retraction of the punch.

The minimum cycle time of the perforator is 40 milliseconds. Data is normally punched on a parallel basis but sequential operation is possible if the feed pulse is related to the last data pulse and provision is made for minimum off time of the feed solenoid (15 msec).

Check No. 4 on ECHO CARD for full details from SBM.

HIGH RELIABILITY READER—TALLY MODEL HR-150

Offering high reliability at 150 characters per second, the Tally HR-150 tape reader is of new, compact, modular design, with low noise level. Minimum life is projected to be 10,000 hours. Read head operation is controlled by a new Tally stepping motor technique which achieves a true step-by-step operation and avoids continuously moving parts.

The HR-150 is both asynchronous and bidirectional. Tape loading is easy and fast. Rewind is bidirectional at 40 inches per second. To step the motor through one character requires two drive pulses plus a damping pulse.

Specifications

Tape Requirements: 5, 6, 7, or 8 level tape
Paper, paper-Mylar laminate or Mylar-foil. Standard $\frac{1}{2}$, $\frac{7}{8}$, or 1 inch

Tape Reader Output: Form C contacts rated at 6–30 V DC
Pulse gated, 50 ma–1 amp
Live switching, 5–100 ma

Termination: Data channels and sensor signals, 34-pin chassis mounted male connector
Stepping motor leads, 6-pin connector

Options: End of Tape Sensor
Tape Motion Sensor
Teletypesetter Configuration
Drive Electronics

To request more data, check Number 5 on ECHO CARD.

AMC MODEL 1000 WAVEFORM ANALYZER

With great pride SBM Associates now serve as representative for Automated Measurements Corporation of Los Gatos, California. The AMC Model 1000 Waveform Analyzer is designed for complete system compatibility, flexibility, speed, and accuracy. Some of the programmed control functions include:

Remote Programming — All digital measurement functions are remotely programmed by one of two optional methods: The Model 1000 Waveform Analyzer is furnished with serial-by-character, variable word length programming capability. Conversion from serial to parallel programming, or vice versa, only requires the replacement of one set of plug-in programming cards with their counterparts.

Multiple Remotely Programmed High Impedance Sampling Probes — Up to ten sampling units may be connected to the circuit under test. Each of these units contains its own sampling system.

Digitally Controlled Preset Slow Ramp — Measurement reference memories can be conditioned in much less than 1% of the time required to condition them with conventional slow ramp



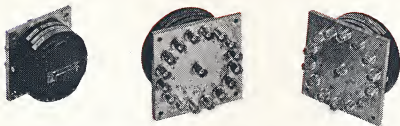
techniques. AMC Model 1000 can perform controlled measurements at 200 per second, including program time.

$\Sigma 10$ Measurements — For higher accuracies in noisy environments, the $\Sigma 10$ measurements mode improves digital count dispersion by $\sqrt{10}$.

Programmed Self-Contained Digital Differential Voltmeter — The DVM portion is completely programmed with an accuracy of better than $\pm 0.05\%$ of reading, $\pm$ last count. Excellent DC measuring capability is provided by full scale decade voltage ranges of plus or minus 1 to 1000 volts, automatic polarity selection, and a visual indication of over-range. The DVM can resolve currents of 1 na.

For further data and complete specifications, check Number 6 on ECHO CARD.

AMC Type 23 and Type 43 Coaxial Switches



The AMC Type 23 and Type 43 Remotely Programmable Coaxial Switches are a new AMC series of 200 picosecond risetime SPDT switches. Each single-pole, double-throw section operates independently.

Check ECHO CARD Number 7 for more on this new series from AMC

Specifications

Pulse Characteristics

Nominal Impedance: 50 ohms

Risetime: 200 picoseconds

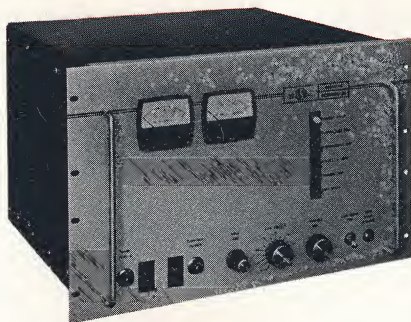
Bandwidth: Above 1.0 gc (-3 db)

Propagation Delays: Matched within 10 picoseconds

Pulse Isolation Between Adjacent Sections:
More than 80 db (0.4 nanoseconds T_R)

Pulse Isolation to Open Switch Terminal:
More than 40 db (0.4 nanoseconds T_R)

HIGH VOLTAGE + HIGH POWER + REGULATION = SORENSEN DCR-HV SERIES POWER SUPPLIES



The DCR-HV Series power supplies are designed to fill the need created by technological advances in industrial electronics. Where precisely controlled high voltages are required, such as in electroplating and electromechanical milling, these supplies offer ideal power sources.

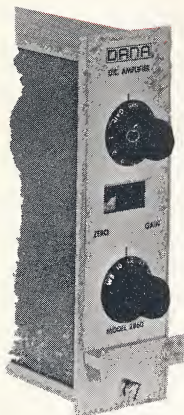
Electrical Specifications

Model		DCR600-2.5A	DCR1500-1A	DCR3000-.5A	DCR6000-.25A	
Output	Voltage (Vdc)		6-600	15-1500	30-3000	60-6000
Power	Current (amps)	@ 30°C	0-2.87	0-1.15	0-.575	0-.287
		@ 55°C	0-2.5	0-1.0	0-.5	0-.25
		@ 71°C	0-1.65	0-.66	0-.33	0-.165
Voltage Regulation		±.075% or ±120mV ²	±.075% or ±300mV ²	±.075% or ±600mV ²	±.075% or ±1.2V ²	
Voltage Ripple (rms) PARD*		.4% +600mV	.4% +1.5V	.4% +3V	.4% +6V	
Current Regulation		±0.15% I _{o max} + 3mA (line and load comb.)		±0.25% I _{o max} + 3mA (line and load comb.)		
Current Ripple (rms) PARD*		2% I _o + 12.5mA	2% I _o + 5mA	2% I _o + 2.5mA	2% I _o + 1.25mA	
Remote	Voltage Mode	50V/volt 15mV/volt (3mA drive)	20V/volt 6mV/volt (3mA drive)	10V/volt 3mV/volt (3mA drive)	0.50V/volt 1.5mV/volt (3mA drive)	
Programming	Current Mode	600/Amp 240mV/Amp (5mA drive)	1500/Amp 600mV/Amp (5mA drive)	3000/Amp 1.2V/Amp (5mA drive)	6000/Amp 2.4V/Amp (5mA drive)	
Output Impedance (ohms)		2	15	50	250	
Efficiency (%)		72	71	70	68	
Meters	Voltmeter	0-800V	0-2000V	0-4000V	0-8000V	
(2% accuracy)	Ammeter	0-3A	0-1.5A	0-600mA	0-300mA	
Input Power	Voltage (Vac)	105 to 125				
	Current (Aac)	25	25	26.5	27	
	Frequency (Hz)	57 to 63 ³				
Power Factor (Typical)		0.76	0.79	0.75	0.70	

*PARD — The Periodic and Random Deviation of the output DC voltage, current or power from its average value, with all external operational and environmental parameters maintained constant.

For more on the DCR, check ECHO CARD Number 8.

Dana Series 2800 Guarded Differential Data Amplifiers



The Dana 2860 Data Amplifier represents a major innovation in the field of data processing and instrumentation. By a breakthrough in modulation techniques, this is the first amplifier of its type to combine the major performance advantages of DC amplifiers with the 300-volt common mode operating capability that is characteristic of modulation coupled amplifiers. Outstanding features include 120 db common mode rejection, high zero stability, low noise, fast overload recovery, 10,000 megohm input impedance, unity gain setting, variable bandwidth, — 18 db per octave filtering.

All models in the Dana 2800 series are in identical mechanical packages and can be inserted interchangeably and in any combination into a standard Dana Series 2800 rack enclosure.

Specifications

Description: Modulation-coupled, passive guard

Output: ± 10 V, ± 100 ma

Gain Range Options: 1 to 2500

Bandwidth: 10 Hz, 100 Hz, 1 KHz, 10 KHz, 50 KHz (selectable)

Input Impedance: 10,000 megohms

Common Mode, Rejection: 120 db DC to 60 Hz

Common Mode, Operating: ± 300 V

Common Mode, Fault: ± 300 V

Zero Stability: $\pm 0.02\%$ for 200 hours

Linearity: $\pm 0.01\%$

Noise, Wideband: 5 μ V rms

Noise, 10 Hz: 1 μ V p-p

Check Number 9 on ECHO CARD for complete details from your SBM engineer.

EH MODEL 128 SOLID-STATE PULSE GENERATOR

EHs Model 128 Pulse Generator features 10 Hz to 50 MHz repetition rate independent positive and negative outputs, with the outputs variable from 125 mv to 5 v; rise time less than 3.5 ns, fall time less than 4.0 ns; pulse width and delay variable from 10 ns to 10 ms; double pulse and single cycle operation; and short and open circuit protected.

SPECIFICATIONS

Pulses: Simultaneous positive and negative

Pulse Repetition Rate: 10 Hz to 50 MHz internal clock, continuously variable

External Drive Input: +1.5 V min, + 15 V max, repetition rates from 0 to 50 MHz

Trigger Output: +1.5 V into 50 ohms, trigger pulse width continuously variable from 10 to 50 nsec



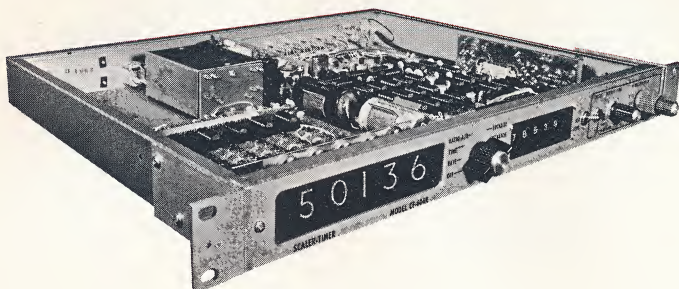
Output Pulse Amplitude: Generated pulses continuously variable, 2 to 5 volts followed by step attenuators with ratios of 1:1, 2:1, 4:1, 8:1, 16:1

Duty Factor: Greater than 50%

This solid-state pulse generator is priced at \$980.00.

Full details and complete specifications may be obtained by checking Number 10.

ANADEx "600" COUNTER SERIES



The Preset Scaler-Timer pictured here is just one of the Anadex "600" Series of frequency counters which are designed to meet specific functional requirements for industrial production test equipment and laboratory applications. Others in this series are:

- Frequency Counter
- Counter-Timer
- Time Interval Counter
- Universal Counter-Timer
- Variable Time Base Counter
- Multi-Channel Variable Time Base Counter
- Totalizer

A very significant feature of the 600 Series is that the customer must specify just which standard options are desired. Custom features in standard models provide compactness, environmental tolerance, and greatly enhanced serviceability at significant economy.

On all the 600 Series, you have a choice of input sensitivity and count rate capability: count rate to 100 KHz @ 10 MV or count rate to 10 MHz @ 100 MV sensitivity rolling off to 200 MV @ 15 MHz. A change to the alternate selection can easily be made at a later date since the amplifier board is readily replaced. Among the options to

choose are display memory, front panel input BNCs, digital output signals, and remote function programming. Most models may be ordered with 4, 5, or 6 decades.

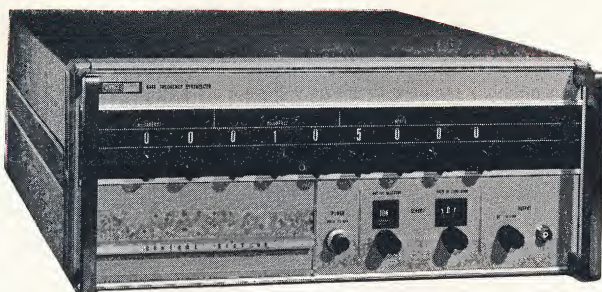
Plug-in TTL integrated circuits are used on flat printed circuit boards to provide easy accessibility and service and to greatly enhance the reliability. The DC switching and TTL integrated circuits provide inherent high noise immunity. The front panels of these counters are only 1 $\frac{3}{4}$ " high, thus conserving valuable space.

Associated with the front panel sensitivity control is a rotary switch to decrease maximum sensitivity by factors of 10 and 100. Decimal indicators are available on most models. Display time is continuously variable from 0.2 to 6 seconds and infinite in HOLD. Reset is made by front panel pushbutton or rear terminal.

Your SBM engineer has the detailed specifications on the many options you may choose for your Anadex 600 counters. He will welcome the opportunity to discuss them with you and help you to select the combination to meet your particular requirements.

For full facts on the Anadex 600 Series, check Number 11 on ECHO CARD.

A NEW FAMILY OF SYNTHESIZERS FROM FLUKE



Pictured is one member of Fluke's new family of frequency synthesizers, the Model 644, which covers the DC to 40 MHz range. Other models cover the ranges from DC to 11 MHz and DC to 1.1 MHz. Featured are exceptionally

low spurious content, low signal to phase noise ratio, modern packaging in a minimum panel height, in-line, in-plane digital presentation, and remote programming. Price: \$10,500.

Specifications

Frequency Range: DC to 40 MHz

Harmonics: At least 30 db below fundamental

Frequency Stability and Accuracy: 1 part in 10^6 /day

Power: 115 or 230 VAC $\pm 10\%$, 50-400 Hz, 75 watts

Spurious Content: At least 90 db below fundamental

Size: Two chassis, $10\frac{1}{2}$ " H x 17" W x 22" D total

Check Number 12 on ECHO CARD for further information.



ELECTRONIC MANUFACTURERS REPRESENTATIVES

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This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slightly textured appearance and is set against a dark background.

S.B.M. ECHO CARD

Just check below any of the literature items offered in this issue of Sidebands and they will be forwarded immediately.

ITEM #1..... ITEM #6..... ITEM #11.....

ITEM #2..... ITEM #7..... ITEM #12.....

ITEM #3..... ITEM #8..... ITEM #13.....

ITEM #4..... ITEM #9..... ITEM #14.....

ITEM #5..... ITEM #10..... ITEM #15.....

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